MONITORING PLAN

PROJECT NO. ME-09 CAMERON PRAIRIE

ORIGINAL DATE: July 11, 1994
REVISED DATE: July 23, 1998

Preface

Pursuant to a CWPPRA Task Force decision on April 14, 1998, the original monitoring plan was reduced in scope due to budgetary constraints. Specifically, shoreline markers will be monitored every three years rather than annually, and one post-construction aerial photography has been dropped.

Project Description

The Cameron Prairie Refuge project includes a 247 ac (100 ha) area located within 1,600 ac (648 ha) of wetlands in the Cameron Prairie National Wildlife Refuge, approximately 25 mi (40 km) southeast of Lake Charles in north central Cameron Parish (figure 1). The project area borders the north bank of the Gulf Intracoastal Waterway (GIWW). Since the construction of the GIWW (between 1935 and 1940) wave erosion on the north bank of the channel has accelerated significantly due to increased utilization by navigational vessels. This energy has enabled high river stages from the Mermentau Basin to overtop and erode the existing spoil bank, thus leaving exposed a highly organic freshwater marsh vulnerable to erosion. The construction of a 2 mi (3.2 km) rock breakwater on the north bank of the channel will prevent the erosion of these organic soils and prevent further breaching along the existing spoil bank.

The Cameron Prairie project is considered a "shoreline protection" project within the CWPPRA classification. Additional descriptive information regarding the Cameron Prairie project can be found in documents prepared by the USFWS for CWPPRA, including a project information sheet (Yakupzack, 1991).

A similar project that employs the use of a rock breakwater is located at Blind Lake. This project is on the GIWW approximately 5 mi (8 km) west of the Cameron Prairie Project and has been subjected to the same high energy wave erosion as the proposed project. The Blind Lake Project has met its goals and objectives of preventing further erosion of existing spoil bank, and is described in the Intracoastal Waterway Bank Stabilization and Cutgrass Planting Project (Holbrook 1996).

Project Objectives

1. Protect the emergent wetlands of the Cameron Prairie NWR adjacent to the GIWW and prevent the loss of approximately 247 ac (100 ha) of marsh.

2. Prevent the widening of the GIWW into the NWR.

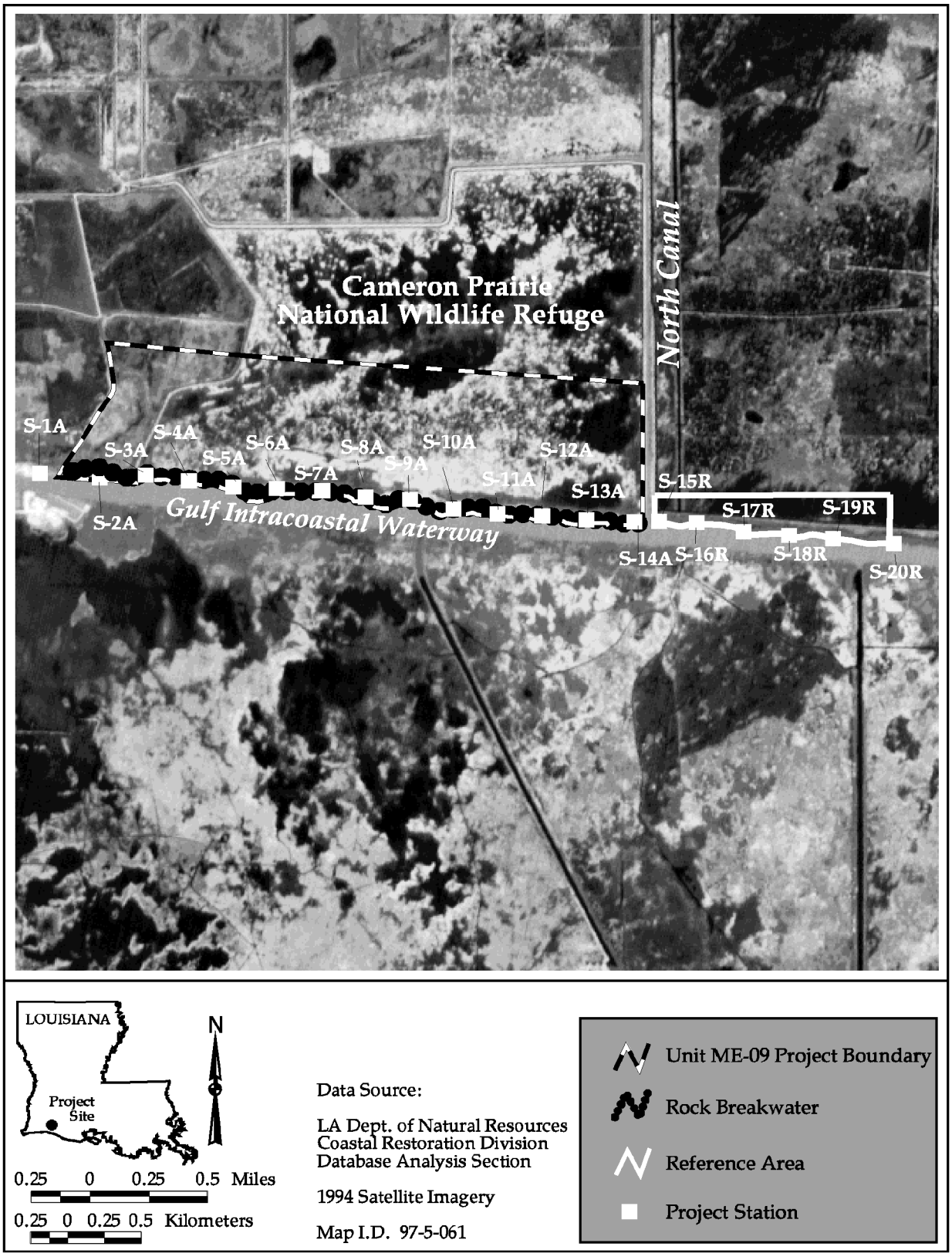

Figure 1. Cameron Prairie Refuge Protection (ME-09) project boundaries and features.

Specific Goals

The following goals will contribute to the evaluation of the above objectives:

1. Decrease the rate of spoil bank erosion along the south boundary of the 247 ac (100 ha) area adjacent to the GIWW within the Cameron Prairie NWR management unit.

2. Restore and maintain approximately 2 mi (3.2 km) of levee along the north bank of the GIWW by constructing a rock dike along the refuge/GIWW boundary.

Monitoring Elements

The following monitoring elements will provide the information necessary to evaluate the specific goals listed above:

1. Aerial Photography — To document vegetated and non-vegetated areas, color infrared aerial photography (1:12,000 scale with ground controls) will be obtained. The photography will be georectified by National Wetland Research Center (NWRC) personnel using standard operating procedures described in Steyer et al, (1995), but detailed photointerpretation, mapping and GIS is not currently planned. The photography will be obtained prior to construction in 1993 and in post-construction years 1996 and 2009.

2. Shoreline Change — To document shoreline movement, shoreline markers will be placed at 30 points along the vegetated marsh edge adjacent to the rock breakwater, the western refuge boundary, and a reference located one mi (1.6 km) east of the proposed breakwater at a maximum interval of 500 ft (152 m). Position of the shoreline relative to the shoreline markers and the rock break water will be documented initially by a professional surveyor in 1995. Post-construction surveys will be conducted in years 1997, 2000, 2003, 2006, 2009, and 2012 by direct measurement using a differential GPS. Aerial photography (1:12,000 scale) and GPS will also be used to document shoreline movement and provide a template for mapping shoreline position and shoreline changes over time. Shoreline positions will be compared to historical data sets available in digitized format for 1956, 1978, and 1988 shorelines.

Anticipated Statistical Analyses and Hypotheses

The following hypotheses correspond with the monitoring elements and will be used to evaluate the accomplishment of the project goals.

2. Paired t-tests, Analysis of Variance (ANOVA), descriptive, and summary statistics will be used to compare measured rates of shoreline movement with historical values for the area. This includes ancillary data collected in this monitoring project, but not used directly in statistical analyses, as well as data available from other surveys (USACOE, USFWS, DNR, LSU). These tests will allow for the analysis and long term documentation of shoreline movement along the GIWW project area (goal 1). Data will be obtained from aerial photography and GPS surveys.

   Goal: Decrease the rate of spoil bank erosion along the south boundary of the 247 ac (100 ha) area adjacent to the GIWW within the Cameron Prairie NWR management unit.

   Hypothesis:

   H_0: Shoreline erosion rate post-construction will not be significantly less than shoreline erosion rates in previous years.

   H_a: Shoreline erosion rate post-construction will be significantly less than shoreline erosion rates in previous years.

Notes

1.	Implementation:	Start Construction:	January 31, 1994
		End Construction:	August 03, 1994
2.	USFW Point of Contact:	Paul Yakupzack	(318) 598-2216
3.	DNR Project Manager:	Melvin Guidry	(318) 893-7947
	DNR Monitoring Manager:	Chad Courville	(318) 898-1151
	DNR DAS Assistant:	Mary Horton	(405) 342-4122

4. The twenty year monitoring plan development and implementation budget for this project is $101,177. Progress reports will be available in September 1995, April 1996 and June 1997, and comprehensive reports will be available in August 2001, August 2004, August 2007, August 2010 and August 2014. These reports will describe the status and effectiveness of the project.

5. USFW refuge personnel will assist DNR with monitoring responsibilities.

6. Monitoring of the rock breakwater will be conducted to observe settlement and slumping in order to determine maintenance requirements.

7. Erosion rates have been estimated by Cameron Prairie Refuge personnel to be 2.5 feet/year.

8. References:

Holbrook, S. 1996. Blind Lake Shoreline Stabilization Progress Report No. 1. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division.

Steyer, G. D., R. C. Raynie, D. L. Steller, D. Fuller and E. Swenson 1995. Quality management plan for Coastal Wetlands Planning, Protection, and Restoration Act monitoring program. Open-file series no. 95–01. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division.

Yakupzack, P. 1991. Proposed project information sheet. Cameron Prairie NWR Erosion Protection, Gibbstown, Louisiana: U.S. Fish and Wildlife Service, Cameron Prairie NWR. 7 pp.

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